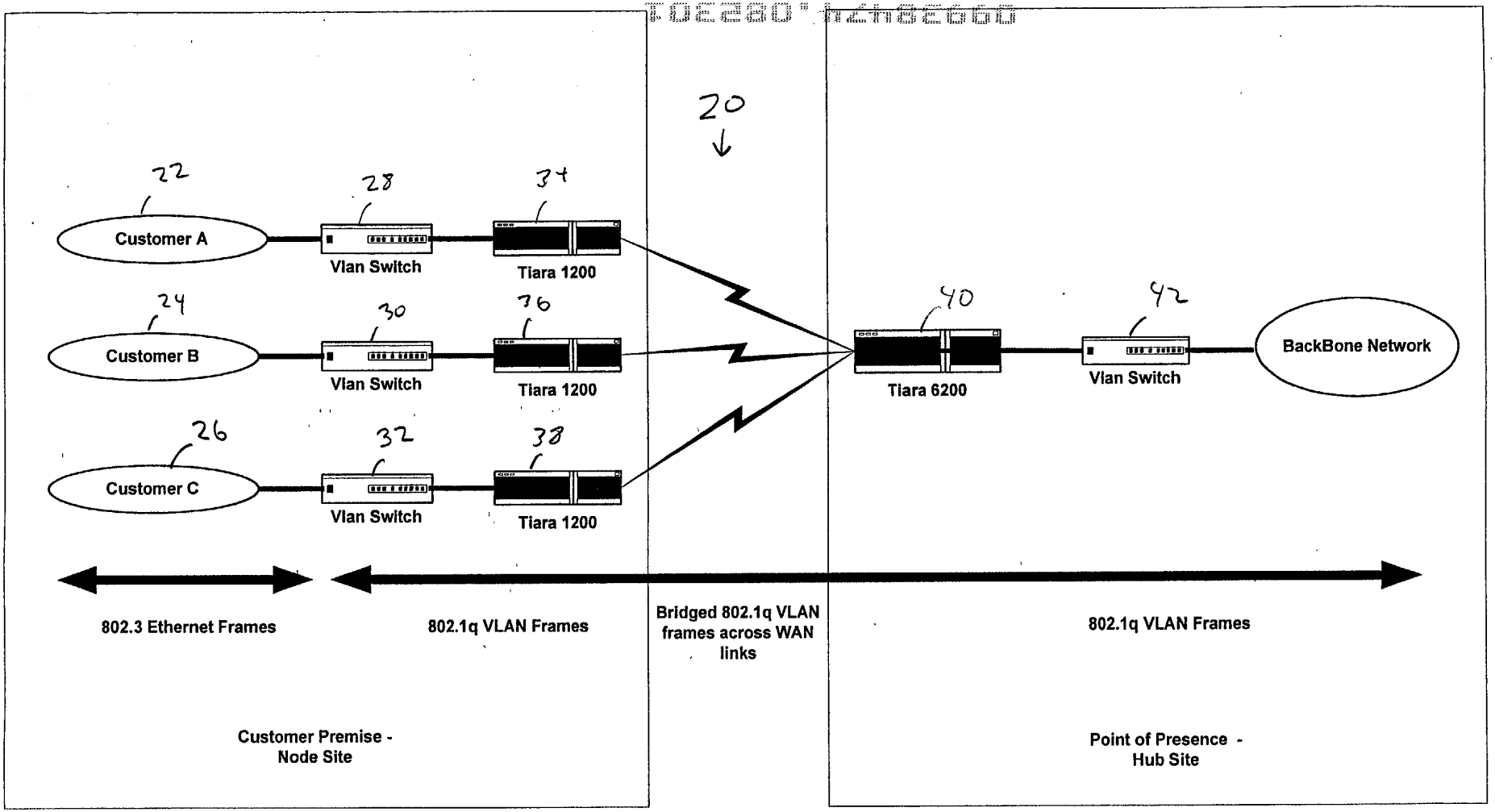

20
22
28
34
Customer A
Vlan Switch
Tiara 1200
24
30
36
Customer B
Vlan Switch
Tiara 1200
26
32
38
Customer C
Vlan Switch
Tiara 1200
40
42
Tiara 6200
Vlan Switch
BackBone Network
802.3 Ethernet Frames
802.1q VLAN Frames
Bridged 802.1q VLAN frames across WAN links
802.1q VLAN Frames
Customer Premise - Node Site
Point of Presence - Hub Site

FIGURE 1A

T0E280 "hZth8E660

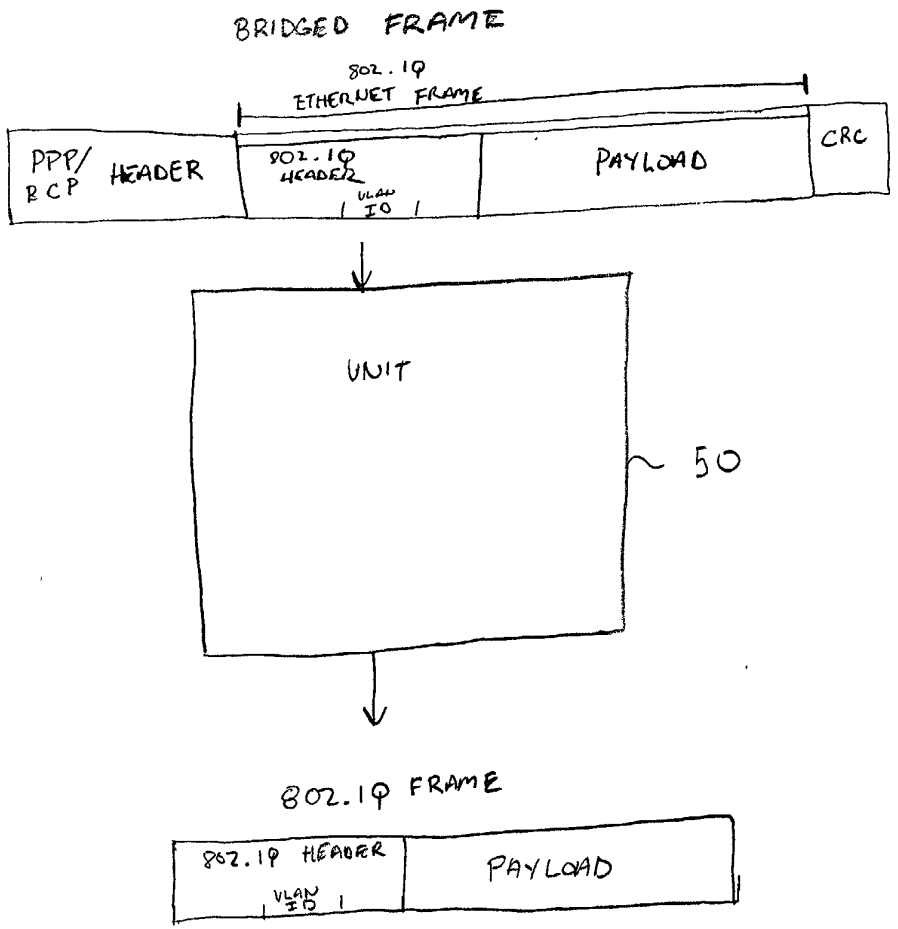


FIGURE 1B

TOE280 "b24b82660

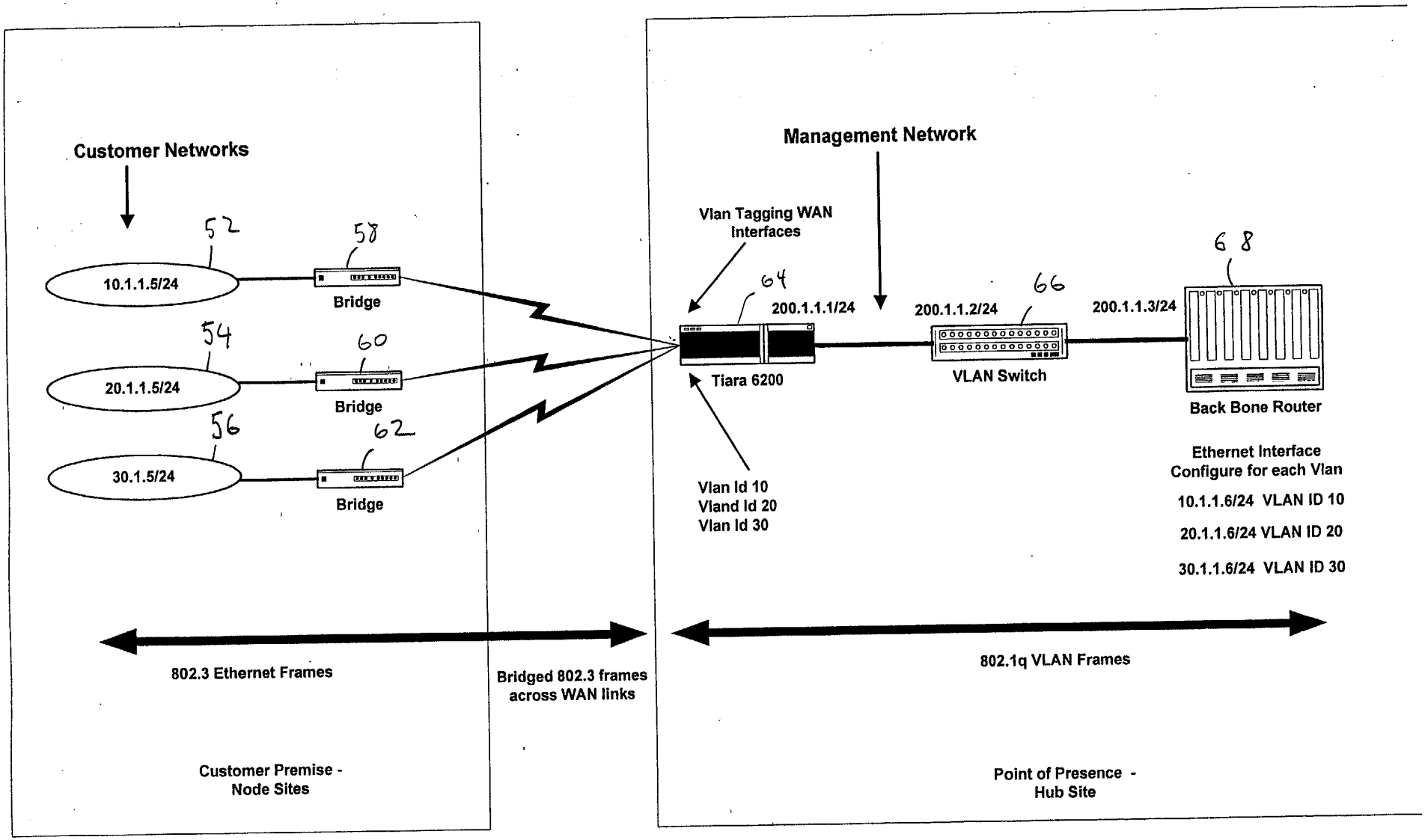


FIGURE 2A

TOE280 "hch82660

BRIDGED 802.3 FRAME

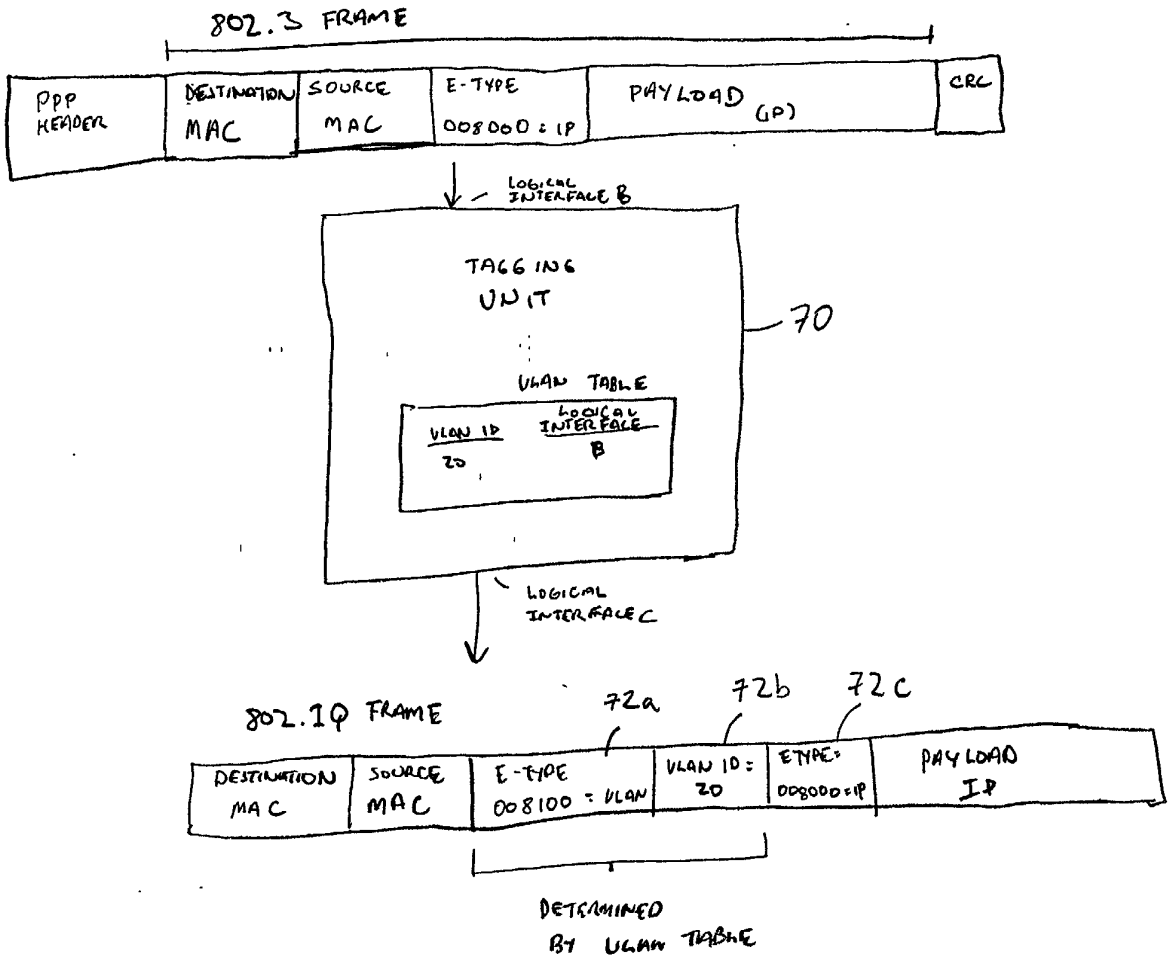


FIGURE 2B

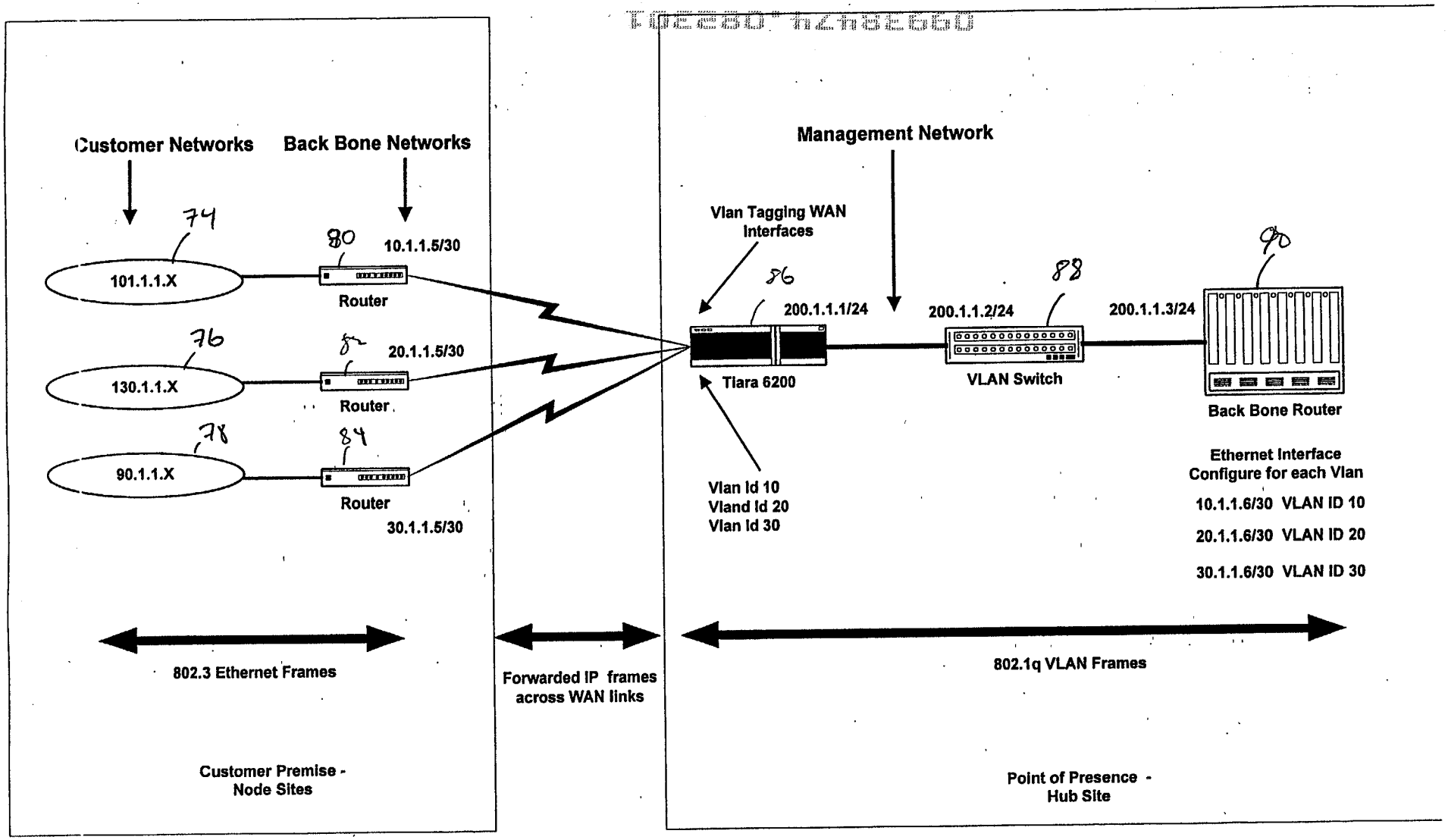

Customer Networks
Back Bone Networks
74
80
10.1.1.5/30
101.1.1.X
Router
76
82
20.1.1.5/30
130.1.1.X
Router
78
84
90.1.1.X
Router
30.1.1.5/30
802.3 Ethernet Frames
Customer Premise -
Node Sites
Forwarded IP frames
across WAN links
Management Network
Vlan Tagging WAN
Interfaces
86
200.1.1.1/24
Tiara 6200
Vlan Id 10
Vland Id 20
Vlan Id 30
88
200.1.1.2/24
VLAN Switch
90
200.1.1.3/24
Back Bone Router
Ethernet Interface
Configure for each Vlan
10.1.1.6/30 VLAN ID 10
20.1.1.6/30 VLAN ID 20
30.1.1.6/30 VLAN ID 30
802.1q VLAN Frames
Point of Presence -
Hub Site

FIGURE 3A

TOE280 "h2h8E660

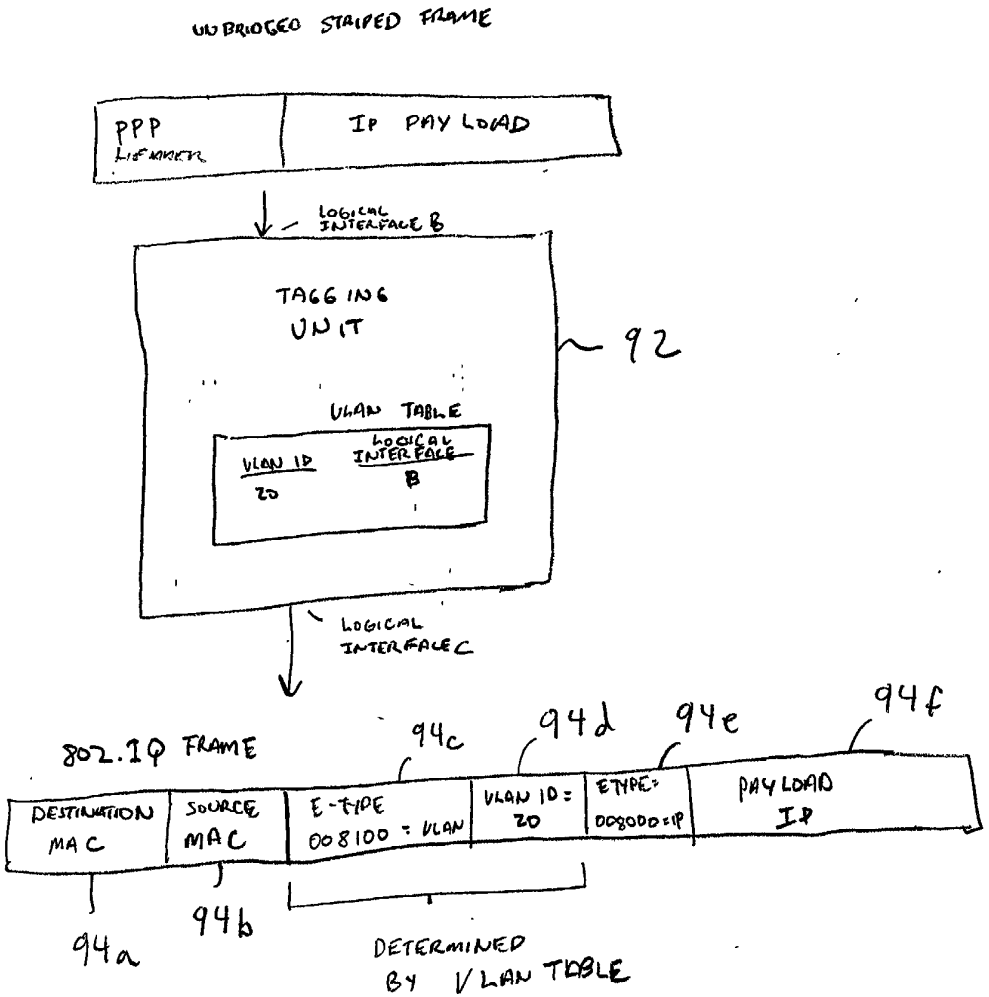
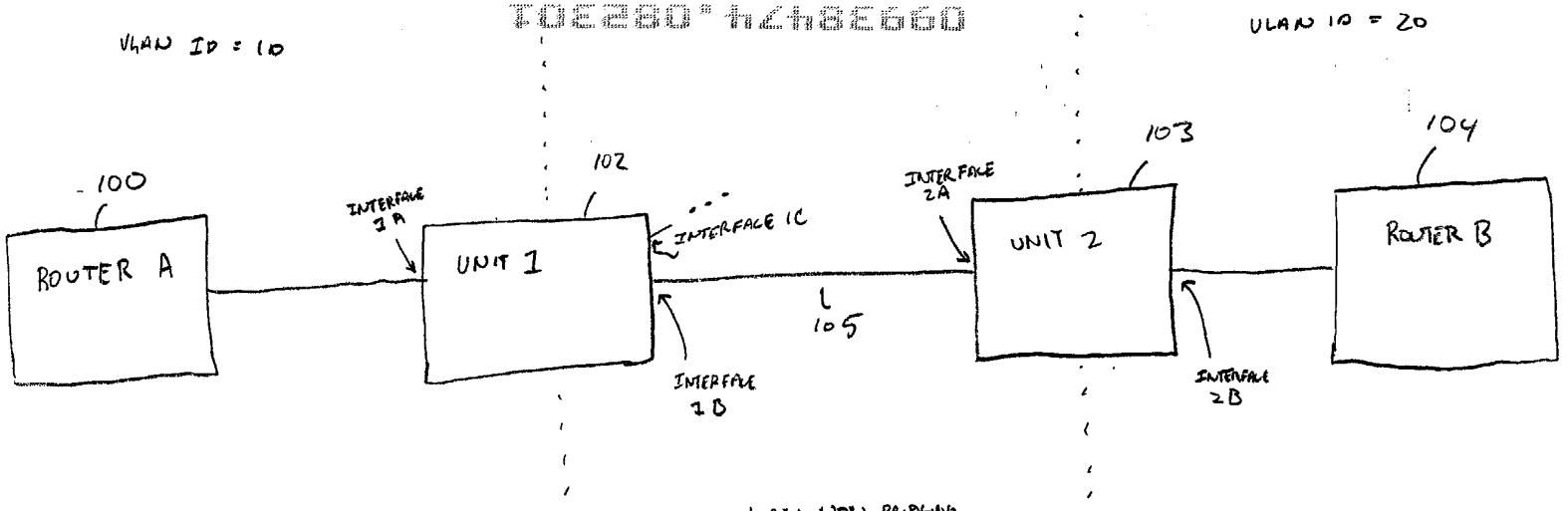


FIGURE 3B

TOE280 "hChBE660



WAN NON-BRIDGING TRANSFERS

UNIT 1
IP MUX TABLE

WAN INTERFACE	SPOOF MAC
INTERFACE 1B	MAC X
INTERFACE 1C	MAC Z

UNIT 1
VLAN TABLE

VLAN ID	LOGICAL INTERFACE
10	INTERFACE 1A

UNIT 2
IP MUX TABLE

WAN INTERFACE	SPOOF MAC
INTERFACE 2A	MAC Y

UNIT 2
VLAN TABLE

VLAN ID	LOGICAL INTERFACE
20	INTERFACE 2B

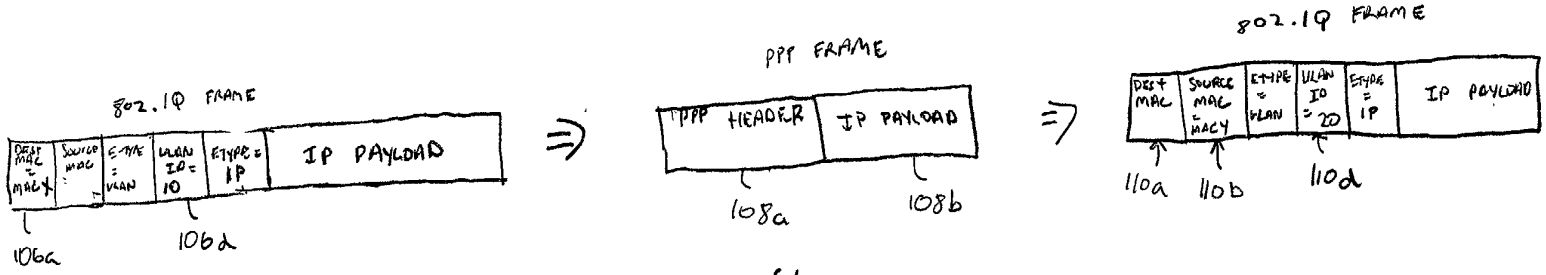


FIGURE 4

IDE280 "hzh8E660

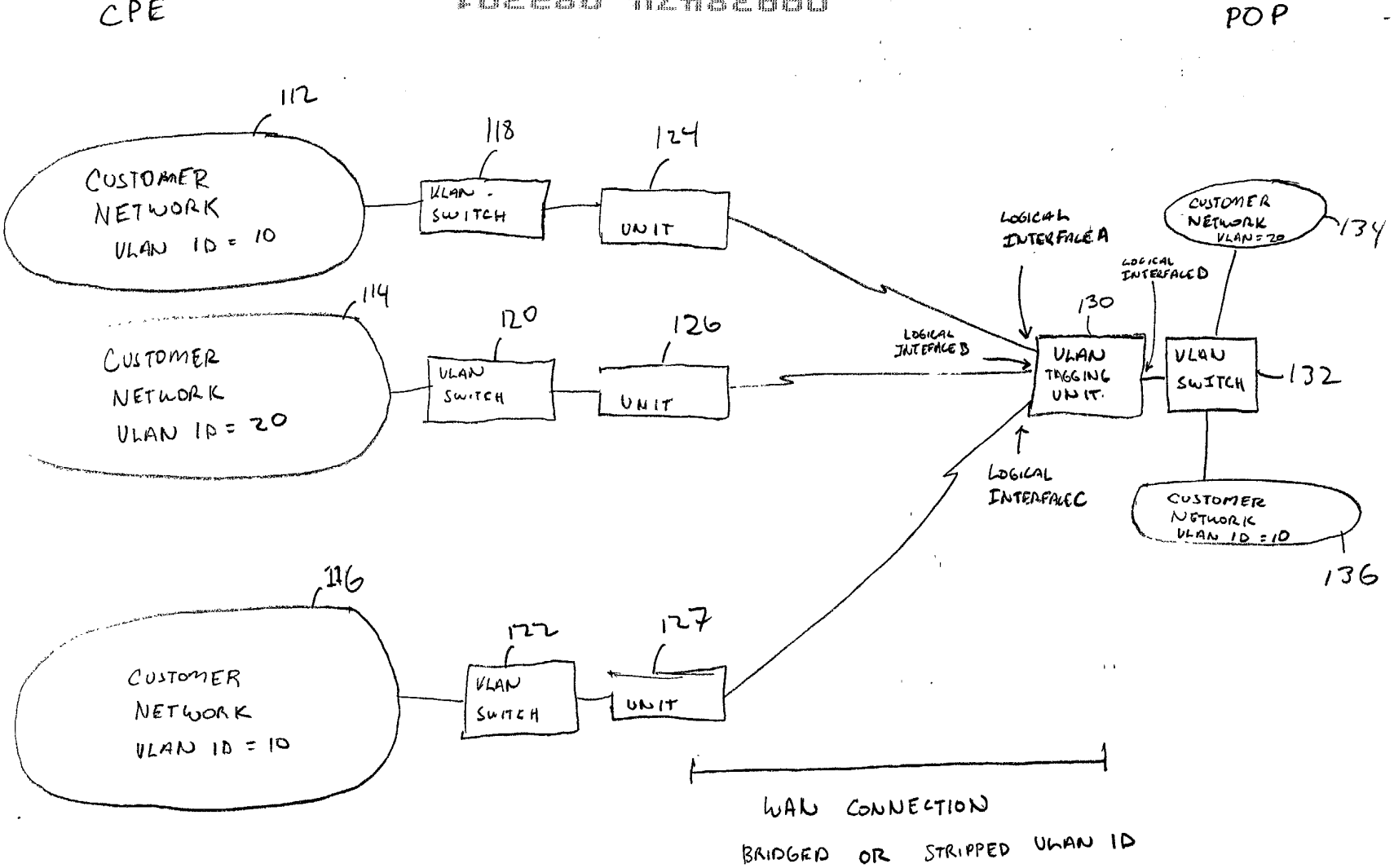


FIGURE 5

VLAN TABLE

VLAN ID	ASSOCIATED LOGICAL INTERFACES	
	WAN	LAN
10	A, C	D
20	B	D

FIGURE 6

VLAN TABLE

VLAN ID	ASSOCIATED LOGICAL INTERFACES		FLOW INDICATION	QOS
	WAN	LAN		
30	E, F	G	IP SUBNET A	
40	E, F	G	IP SUBNET B	

FIGURE 7

VLAN TABLE

- VLAN ID
- ASSOCIATED LOGICAL INTERFACES
- FLOW INDICATION
- SERVICE INDICATION
  - QOS
  - TRANSLATION
  - ENCRYPTION
- NETWORK ADDRESS TRANSLATION INDICATION

FIGURE 8

TOE2360 "1749660

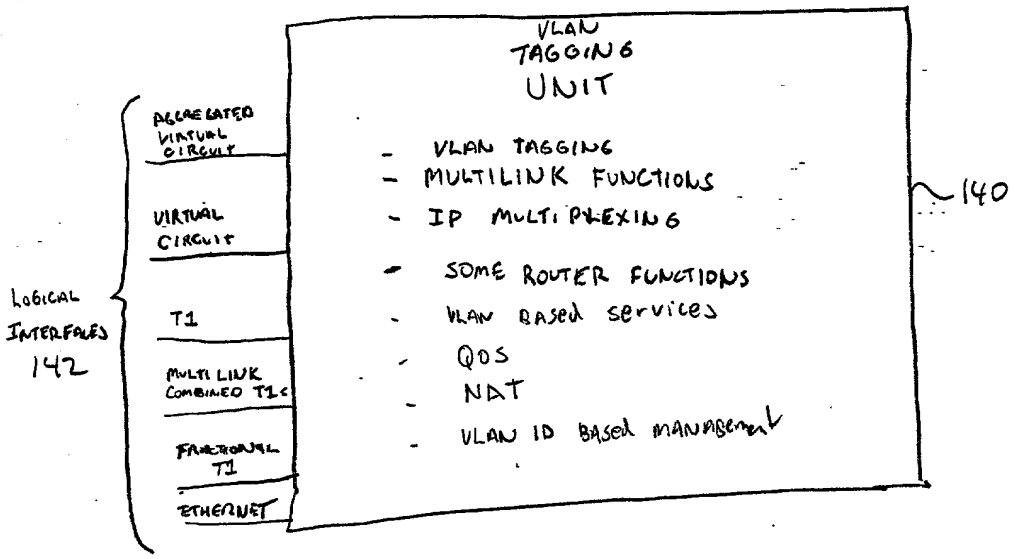

VLAN
TAGGING
UNIT
- VLAN TAGGING
- MULTILINK FUNCTIONS
- IP MULTIPLEXING
- SOME ROUTER FUNCTIONS
- VLAN BASED SERVICES
- QOS
- NAT
- VLAN ID BASED MANAGEMENT
140
AGGREGATED VIRTUAL CIRCUIT
VIRTUAL CIRCUIT
T1
MULTI LINK COMBINED T1s
FRACTIONAL T1
ETHERNET
LOGICAL INTERFACES
142

FIGURE 9

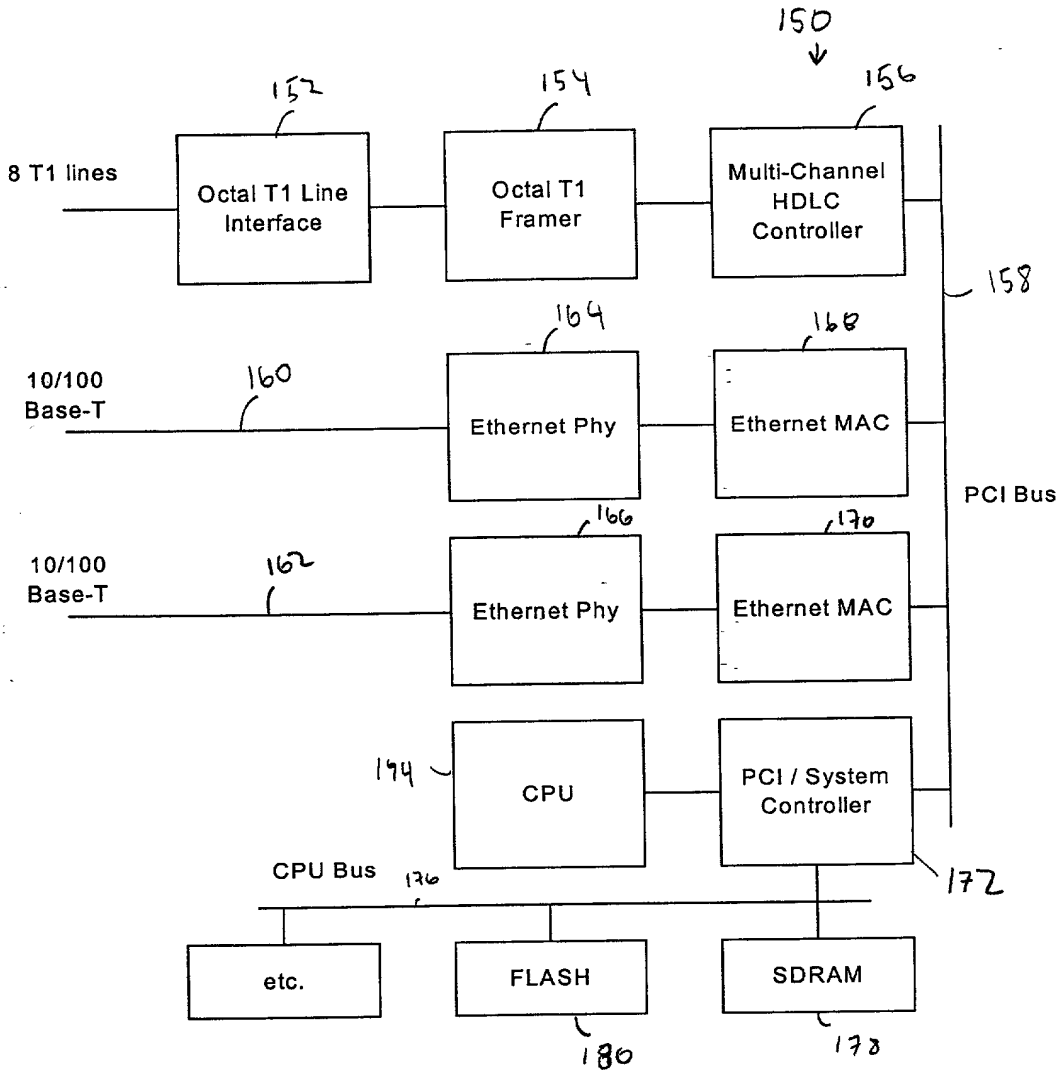

150
152
154
156
8 T1 lines
Octal T1 Line Interface
Octal T1 Framer
Multi-Channel HDLC Controller
158
164
168
10/100 Base-T
160
Ethernet Phy
Ethernet MAC
PCI Bus
166
170
10/100 Base-T
162
Ethernet Phy
Ethernet MAC
194
CPU
PCI / System Controller
CPU Bus
176
172
etc.
FLASH
SDRAM
180
178

FIGURE 10

VLAN Forwarding Table Sample Output

Tiara/configure/vlanfwd> *display vlanfwd table*

Vlan Ether Type - 33024(0x8100)

Vlan Forwarding Table -

Interface Name	Vlan Id
ethernet0	100-120, 500, 4095
ethernet1	1-500, 600, 1000

VLAN Forwarding Statistics Sample Output

Tiara/configure/vlanfwd> *display vlanfwd statistics*

Vlan Forwarding Statistics -

Vlan Forwarding - ENABLED
Vlan Ether Type - 33024(0x8100)

Vlan Id: (4091)

Outgoing Vlan Packets: 500
Incoming Vlan Packets: 500
Dropped Vlan Packets: 0

Vlan Id: (4092)

Outgoing Vlan Packets: 2000
Incoming Vlan Packets: 2000
Dropped Vlan Packets: 0

Vlan Id: (4093)

Outgoing Vlan Packets: 10
Incoming Vlan Packets: 10
Dropped Vlan Packets: 0

FIGURE 11

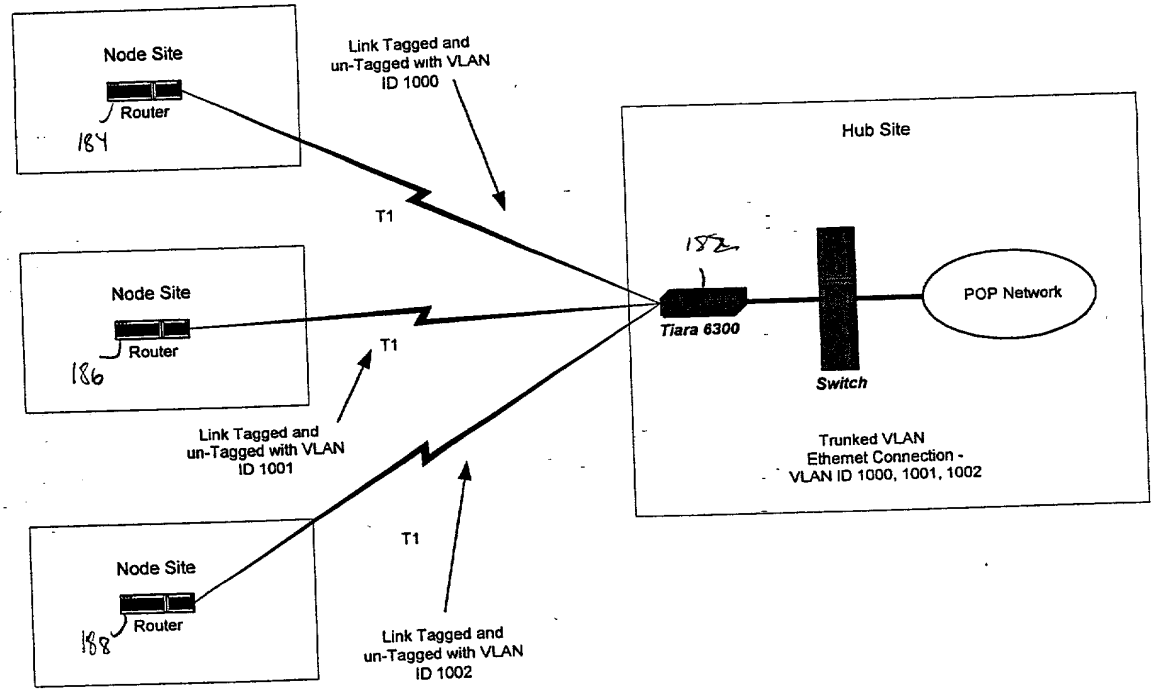


FIGURE 12

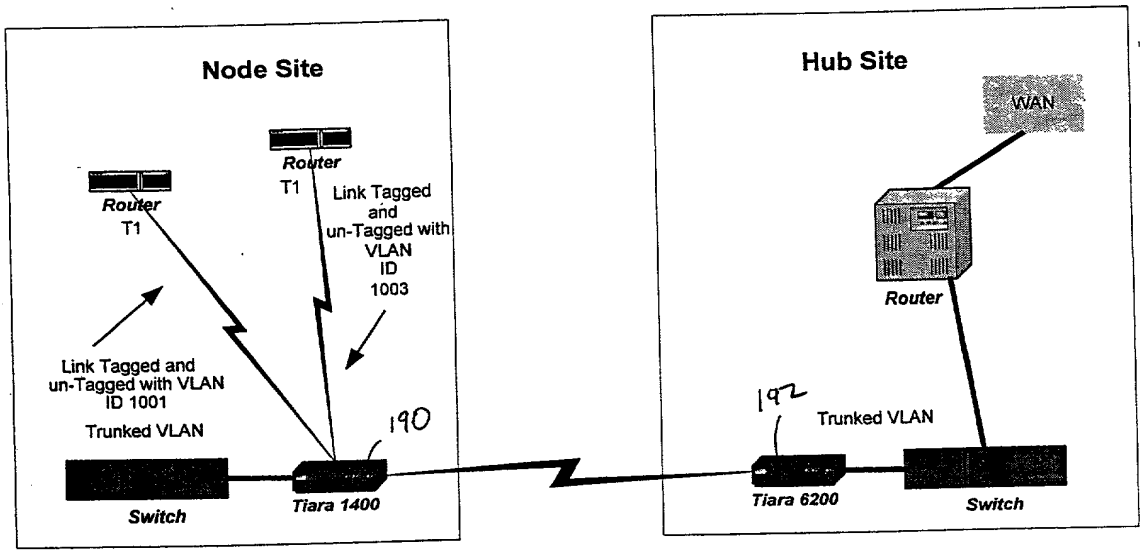


FIGURE 13

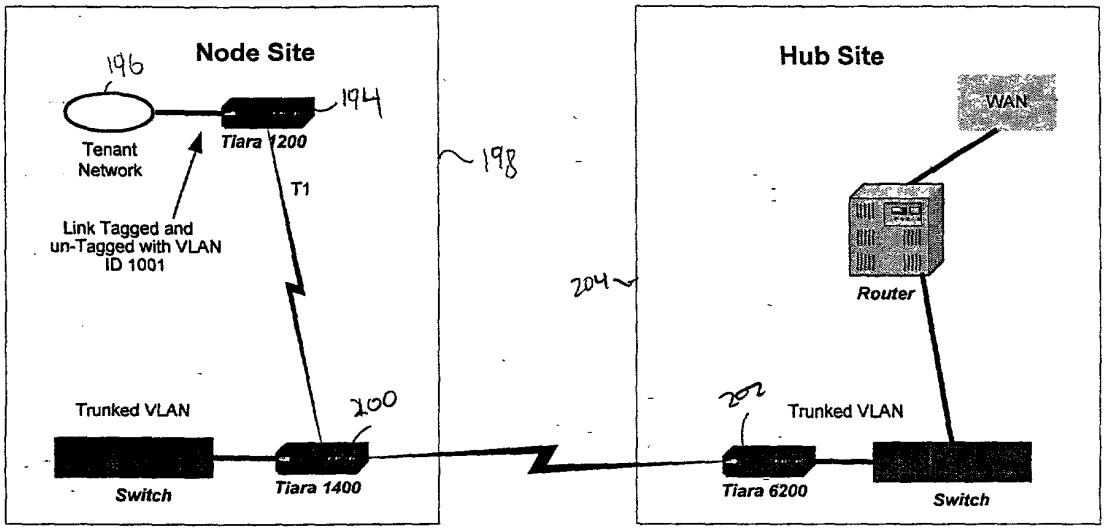

Node Site
196
194
Tenant Network
Tiara 1200
T1
198
Link Tagged and un-Tagged with VLAN ID 1001
Hub Site
WAN
204
Router
Trunked VLAN
200
202
Trunked VLAN
Switch
Tiara 1400
Tiara 6200
Switch

FIGURE 14

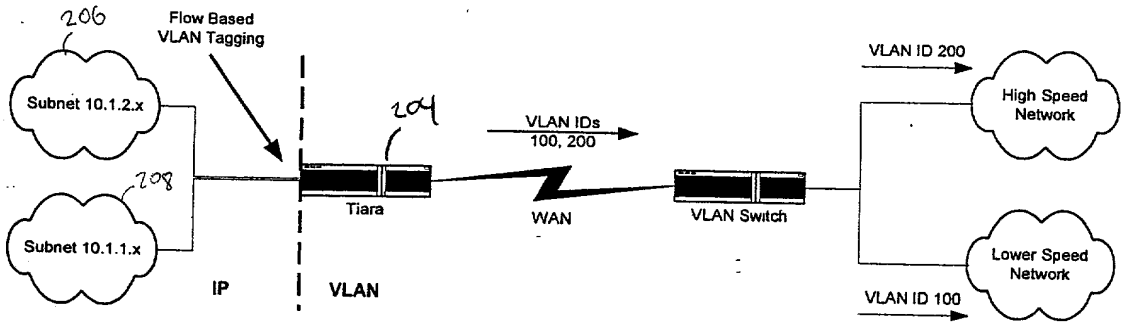


FIGURE 15

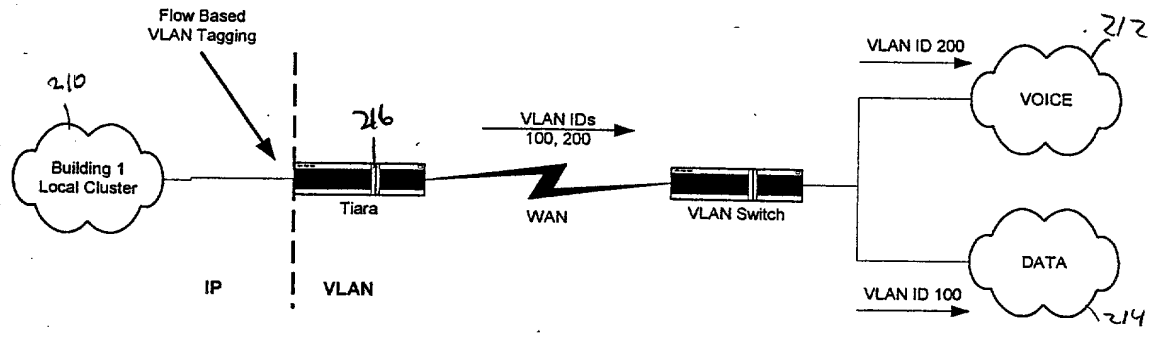


FIGURE 16

10C2360 "h/4h8Eb0

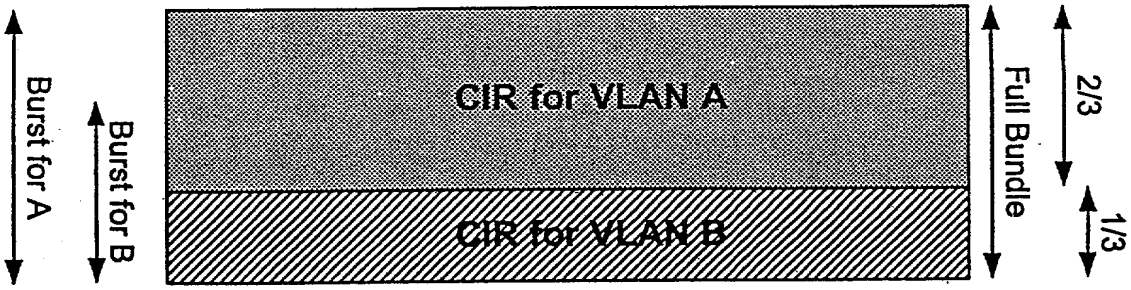


FIGURE 18

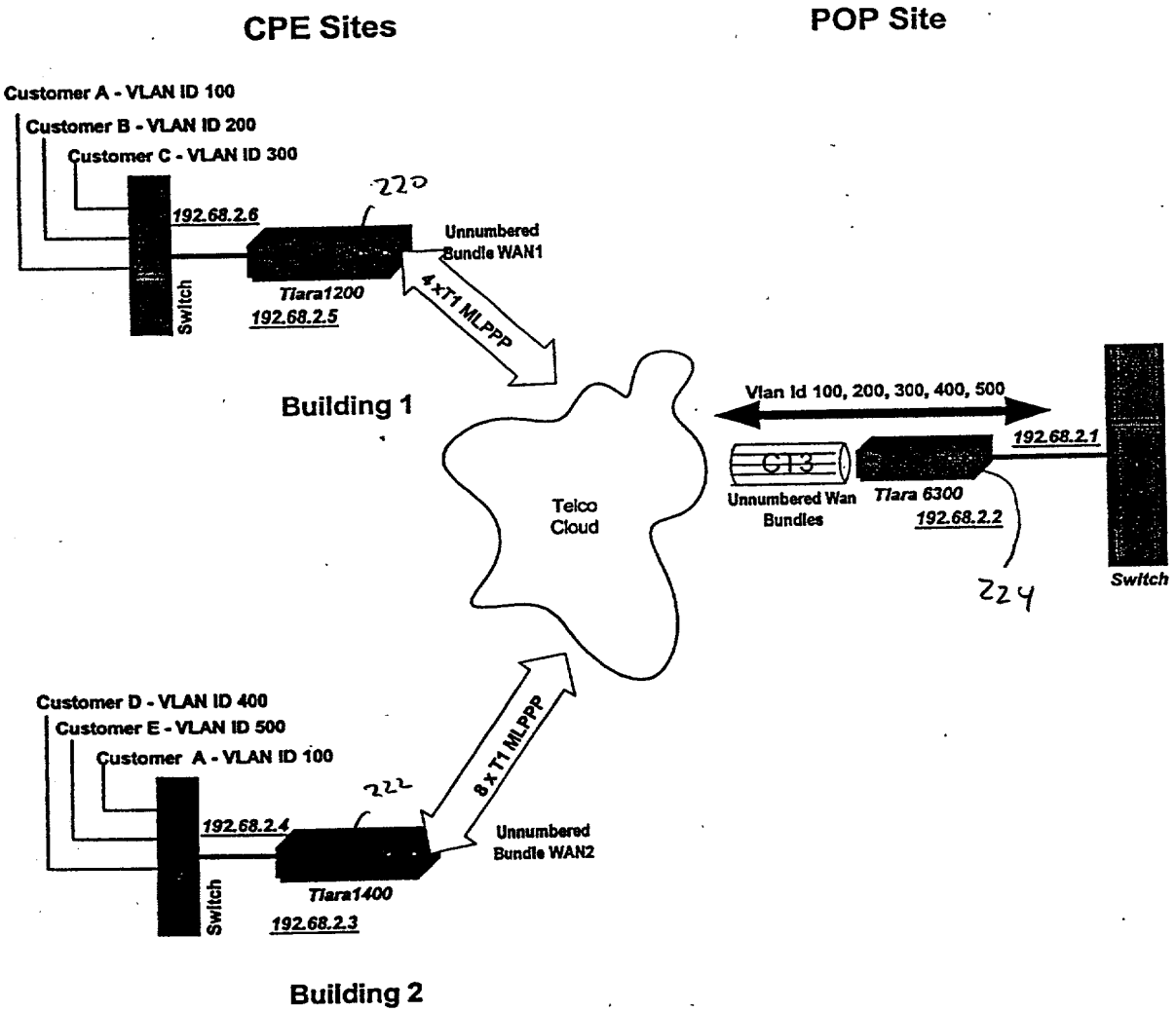


FIGURE 17